of the system authorization switch; the detection of a level of voltage from the voltage supply means falling below a predetermined level; the passing of a predetermined period of inactivity of the firearm; and the failure or malfunction of the system control means or any component connected thereto.

IN THE CLAIMS

Claims 1 – 9 and 11 – 40 as originally filed and new claims 41 – 74 as added in the Preliminary Amendment filed 1/13/00 are pending in this case.

Please cancel claim 10.

Pursuant to 37 C.F.R. § 1.121(b)(2), please amend the claims as follows:

1. (Twice Amended - Pending) In an electronic firearm for firing electrically activated ammunition, comprising a barrel [attached to a receiver], a chamber formed in the barrel [adjacent to the receiver, the receiver being] and adapted to receive at least one round of electrically fired ammunition, [the barrel and receiver encased in a stock, a moveable bolt assembly positioned within the receiver, the bolt assembly being adapted to convey a round of ammunition from the receiver into the chamber of the barrel, the bolt assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among open, closed, and closed and locked positions, and] an electrically conductive firing pin, a trigger assembly [operatively connected to the bolt assembly, and], a voltage supply means, and a safety mechanism [having at least a safe and fire position], the improvement comprising:

A. A system control means receiving power from the voltage supply means, programmed to control firing upon actuation of the trigger assembly,

[safety, power conservation, and diagnostic functions,] the system control means comprising:

i. Voltage increasing means connected to transmit increased voltage to the firing pin;

ii. Switching means for isolating the firing pin from the voltage increasing means, and the voltage increasing means from the voltage supply means, the switching means being activated upon the occurrence of at least one condition selected from:

a. the absence of a round of ammunition within the chamber of the barrel;

b. the safety mechanism being in [the] a safe position;

[c. the bolt being in the unlocked position;]

[d. the bolt being in the open position;]

[e.]c. the passing of a predetermined period of inactivity of the firearm; and

[f.]d. the failure or malfunction of the system control means or any component connected thereto;

[iii. Means for electronically detecting the presence of a round of ammunition within the chamber of the barrel;]

[iv. Means for monitoring the capacity of the voltage supply means; and]

[v.]iii. Electronic safety operatively connected to the safety mechanism for preventing voltage from reaching the firing pin when the safety mechanism is in the safe position. [and for preventing the system control means from detecting a trigger pull when the safety is in the safe position;]

[B. Electronic trigger switch operatively connected to the trigger and the system control means, the electronic trigger switch adapted to send a signal to the system control means when the trigger is pulled;]

[C. Electrical isolation means insulating the body of the firing pin, the firing pin having a forward conductive end and a rearward conductive area, the forward conductive end positioned to transmit voltage to a round of ammunition within the chamber of the barrel only when the bolt assembly is in a closed and locked position, the rearward conductive area positioned to receive voltage only when the bolt assembly is in the closed and locked position and;]

[D. At least one indicator operatively connected to the system control means.]

2. (Amended - Pending) A firearm of claim 1 [wherein the] and further including a bolt assembly [has] having front and rear ends and which is movably positioned within [the] a receiver, positioned behind and substantially aligned with the barrel, the bolt assembly comprising a hollow bolt body operatively connected at its rear end to a hollow bolt plug, a bolt handle on the rear of the bolt assembly, a movable firing pin assembly within the bolt body

having forward and rearward ends, and a firing pin spring to bias the firing pin assembly forward by acting between the bolt plug and the rear of the firing pin assembly.

14. (Amended - Pending). A firearm of claim 1 [wherein the] and further comprising means for electronically detecting the presence of a round of ammunition within the chamber of the barrel [comprises], including at least two electrodes positioned to contact electrically conductive portions of a round of ammunition within the chamber.

19. (Amended - Pending). A firearm of claim 1 [wherein the] and further including an electrical isolation means [comprises] comprising a modification of [the] a surface of the firing pin.

20. (Amended – Pending). A firearm of claim [16] 19 wherein the surface modification comprises ion implantation.

21. (Amended - Pending). A firearm of claim [1] 19 wherein the electrical isolation means comprises an insulating coating.

25. (Amended - Pending). A firearm of claim 1 [wherein the] and further including an electrical isolation means [comprises] comprising an insulating sleeve surrounding the firing pin.

30. (Twice Amended - Pending). A firearm of claim 1 and wherein the system control means and electronic safety are adapted to isolate the firing pin when the safety mechanism is in the safe position by rejecting signals received from the trigger switch (a) when the trigger is [pulled] activated, and (b) when the trigger is [pulled] activated and held while the safety mechanism is switched from [the] a safe position to [the] a fire position

38. (Twice Amended - Pending). In a process for firing electrically activated ammunition from an electronic firearm comprising a barrel [attached to a receiver], a chamber formed in the barrel [adjacent to the receiver, the receiver being] and adapted to receive at least one round of electrically fired ammunition, [the barrel and receiver encased in a stock, a moveable bolt assembly positioned within the receiver, the bolt assembly being adapted to convey a round of ammunition from the receiver into the chamber of the barrel, the bolt assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among open, closed, and closed and locked positions, and], an electrically conductive firing pin, a trigger assembly [operatively connected to the bolt assembly], a voltage supply means for supplying a voltage to the firing pin, and a safety [having at least a safe and a fire position], the improvement comprising:

A. Controlling and coordinating [all firing, safety, power conservation, and diagnostic functions, and regulating] the distribution of power to the firing pin through a system control by;

i. [Increasing the voltage from the voltage supply means, and] [regulating] Regulating the transmission of [the increased] voltage to the firing pin;

ii. Conserving power by isolating the firing pin from [the voltage increasing means, and the voltage increasing means from] the voltage supply means, upon the occurrence of at least one condition selected from:

a. the absence of a round of ammunition within the chamber of the barrel;

b. the safety being in [the] a safe position;

[c. the bolt being in the unlocked position;]

[d. the bolt being in the open position;]

[e.] c. the passing of a predetermined period of inactivity of the firearm;

d. unauthorized activation of the firearm;

[f.] e. the failure or malfunction of the system control means or any component connected thereto; and

[iii. Electronically detecting the presence of ammunition within the chamber of the barrel;]

[iv. Monitoring the capacity of the voltage supply means; and]

[v. Preventing voltage from reaching the firing pin when the safety is in the safe position and preventing the system control from

accepting the signal from the trigger switch generated by a trigger pull when the safety is in the safe position;]

B. Sending a signal to the system control means when the trigger is [pulled; and] activated.

[C. Indicating the status of the firearm.]

39. (Amended - Pending). A process of claim 38, further comprising detecting the presence of a round of ammunition within the chamber, and determining whether a detected round of ammunition within the chamber is viable.

40. (Amended – Pending). A process of claim 38 further comprising [visually] indicating the status of the firearm.

Please add the following new claims:

41. (New - Pending). A process of claim 38 and further including electronically detecting the presence of a round of ammunition within the chamber of the barrel.

42. (New - Pending). A process of claim 38 and further including monitoring the capacity of the voltage supply means.

43. (New - Pending). A process of claim 38 and further including preventing voltage from reaching the firing pin when the safety is in a safe position.

44. (New - Pending). A process of claim 38 and further including preventing the system control from accepting a signal from the trigger generated by actuation of the trigger when the safety is in a safe position.

45. (New - Pending). The firearm of claim 1 and further including at least one indicator operatively connected to the system control means.

46. (New - Pending). The firearm of claim 1 and wherein the firing pin includes a forward conductive end for transmitting voltage to a round of ammunition within the chamber, and a rearward conductive area to receive voltage from the voltage increasing means.

47. (New - Pending). An electronic firearm, comprising:

a barrel;

a chamber in which a round of electrically fired ammunition is received;

a conductive firing pin for transmitting power to the round of ammunition;

a voltage supply for supplying power for initiating firing of the round of ammunition;

a system control powered by said voltage supply and monitoring the firearm, for controlling the firing of the round of ammunition, said system control including a switching means for isolating said firing pin from receiving power supplied by said voltage supply upon the occurrence of at least one of the following conditions:

a. the firearm being in a sleep mode;

b. insufficient energy to initiate the firing of the round of ammunition;

c. detection of voltage from said voltage supply below a predetermined level;

d. detection of voltage from said voltage supply above a predetermined level;

e. absence of a round of ammunition in said chamber;

f. lack of viability of the round of ammunition;

g. inactivity of the firearm for a predetermined time;

h. unauthorized activation of the firearm;

i. failure of any electronically operated components of the firearm; and

j. failure of the system control;

a trigger assembly communicating with said system control and having a trigger, whereby as said trigger is activated, a signal is sent to said system control to initiate firing of the round of ammunition.

48. (New - Pending). The electronic firearm of claim 47 and wherein said system control further comprises a voltage increasing means for increasing voltage received from said voltage supply to a voltage sufficient to initiate the firing of the round of ammunition.

49. (New - Pending). The electronic firearm of claim 48 and wherein said switching means isolates said voltage supply from said voltage increasing means.

50. (New - Pending). The electronic firearm of claim 48 and wherein said switching means isolates said voltage increasing means from said firing pin.

51. (New - Pending). The electronic firearm of claim 47 and further comprising an indicator communicating with said system control for indicating the status of the firearm.

52. (New - Pending). The electronic firearm of claim 47 and further comprising a system authorization switch communicating with said system control for controlling access to the firearm.

53. (New - Pending). The electronic firearm of claim 47 and further comprising an insulating coating applied to said firing pin.

54. (New - Pending). The electronic firearm of claim 47 and further comprising an insulating sleeve positioned about said firing pin.

55. (New - Pending). The electronic firearm of claim 47 and further including a firearm safety mechanism and an electronic safety operatively connected to said firearm safety mechanism and wherein said system control means and electronic safety are adapted to isolate

said firing pin when said firearm safety is in a safe position by rejecting signals received from said trigger (a) when said trigger is activated, and (b) when said trigger is activated and held while said firearm safety mechanism is moved from a safe position to a fire position.

56. (New - Pending). The electronic firearm of claim 47 and further including means for determining the presence of a round of ammunition in said chamber.

57. (New - Pending). The electronic firearm of claim 47 and further including a firearm safety mechanism movable between a fire and a safe position for placing the firearm in a nonoperative condition upon movement of said safety mechanism to a safe position.

58. (New - Pending). The electronic firearm of claim 47 and wherein said system control includes programming for performing an operational sequence to monitor and control the firearm including initiating a sleep mode for the firearm to place the firearm in a nonoperative condition.

59. (New - Pending). The electronic firearm of claim 47 and wherein said system control comprises at least one of the following: a microprocessor, microcontroller, software, firmware, microcode, digital logic, analog logic, and custom integrated logic.

60. (New - Pending). An electronic firearm, comprising:

a barrel;

a chamber in which a round of electrically initiated ammunition is received;

a firing pin;

a trigger for initiating firing of the round;

a voltage supply for supplying power to said firing pin for firing the round;

a system control means for monitoring the firearm and controlling the power supplied to said firing pin in response to failure of an operative condition required for firing the firearm and including a switching means for isolating said firing pin from said voltage supply to prevent the firing of the round of ammunition.

61. (New - Pending). The electronic firearm of claim 60 and further including a voltage increasing means connected to said voltage supply and said firing pin for transmitting an increased voltage to said firing pin for firing the round of ammunition.

62. (New - Pending). The electronic firearm of claim 60 and wherein said switching means is controlled by said system control means to prevent said firing pin from receiving power from said voltage supply upon detection of at least one of the following conditions:

a. the firearm being in a sleep mode;

b. insufficient energy to initiate the firing of the round of ammunition;

c. detection of voltage from said voltage supply below a predetermined level;

d. detection of voltage from said voltage supply above a predetermined level;

e. absence of a round of ammunition in said chamber;

f. lack of viability of the round of ammunition;

g. inactivity of the firearm for a predetermined time;

h. unauthorized activation of the firearm;

i. failure of any electronically controlled and operated components of the firearm;

j. failure of any programmed condition to be met; and

k. failure of said system control means.

63. (New - Pending). The electronic firearm of claim 60 and further comprising a safety moveable between a safe and a fire position, and an electronic safety connected to said safety for monitoring said safety and preventing power from being provided to said firing pin and preventing said system control means from detecting a trigger activation when said safety is in a safe position.

64. (New - Pending). The electronic firearm of claim 60 and further comprising at least one indicator communicating with said system control means for indicating the status of the firearm.

65. (New - Pending). The electronic firearm of claim 60 and wherein said firing pin comprises a forward conductive end for transmitting voltage to a round of ammunition within the chamber, and a rearward conductive area to receive voltage from the voltage supply.

66. (New - Pending). The electronic firearm of claim 60 and wherein said firing pin further includes an insulating coating applied thereto.

67. (New - Pending). The electronic firearm of claim 60 and further including an insulative sleeve positioned about said firing pin.

68. (New - Pending). The electronic firearm of claim 60 and further including a means for detecting the presence of a round of ammunition in the chamber.

69. (New - Pending). The electronic firearm of claim 60 and further comprising a system authorization switch communicating with said system control means for controlling access to the firearm.

70. (New - Pending). A method of firing a round of electrically-initiated ammunition from an electronic firearm, comprising:

Monitoring a sequence of operative conditions with a system control;

Sending a signal to the system control upon activation of a trigger;

Controlling and coordinating distribution of power to a firing pin, including isolating and preventing the firing pin from receiving power upon the occurrence of at least one condition selected from:

a. the firearm being in a sleep mode;

b. insufficient energy to initiate the firing of the round of ammunition;

c. detection of voltage from a voltage supply below a predetermined level;

d. detection of voltage from a voltage supply above a predetermined level;

e. absence of a round of ammunition in a chamber of the firearm;

f. lack of viability of the round of ammunition;

g. inactivity of the firearm for a predetermined time;

h. failure of any electronically controlled and operated components of the firearm;

i. failure of any programmed condition;

j. unauthorized activation of the firearm; and

k. a safety mechanism of the firearm being in a safe position;

Transmitting power to the firing pin from the voltage supply for transmission to the round of ammunition; and

Applying power to the round of ammunition.

71. (New - Pending). The method of claim 70 and further including indicating the status of the firearm.